

WHAT IS CLAIMED IS:

- 1 1. A reflective liquid crystal display comprising:
 - 2 a linear polarizer for converting natural light into linearly polarized light;
 - 3 a retardation film for converting the linearly polarized light into circularly polarized
 - 4 light;
 - 5 a liquid crystal layer for receiving the circularly polarized light and varying the
 - 6 phase of the circularly polarized light depending on the presence of an applied electric field;
 - 7 a cholesteric liquid crystal color filter for receiving the circularly polarized light
 - 8 from the liquid crystal layer, and selectively reflecting the circularly polarized light received
 - 9 from the liquid crystal layer; and
 - 10 a black background for absorbing a portion of light passing through the color filter.
- 1 2. The reflective liquid crystal display of claim 1, wherein the retardation film is a $\lambda/4$ plate.
- 1 3. The reflective liquid crystal display of claim 1, wherein the black background is located
2 beneath the color filter.
- 1 4. The reflective liquid crystal display of claim 1, wherein the retardation film is located
2 between the linear polarizer and the color filter.
- 1 5. The reflective liquid crystal display of claim 1, wherein the black background is made of a
2 polymeric material.
- 1 6. The reflective liquid crystal display of claim 1, wherein a bandwidth of the color filter can

2 be controlled by adjusting a pitch of the cholesteric liquid crystal color filter.

1 7. A reflective liquid crystal display comprising:

2 first and second substrates opposite to and spaced apart from each other;

3 a liquid crystal layer interposed between the first and the second substrates, the

4 liquid crystal layer having a first switching mode in which a phase of light is changed while

5 passing through it, and a second switching mode in which the phase of light is not changed

6 while passing through it;

7 first and second electrodes for applying an electric field to the liquid crystal layer;

8 a semiconductor element located on the second substrate for switching an electric

9 signal applied to the liquid crystal layer;

10 a retardation film located on the first substrate for converting linearly polarized light

11 into circularly polarized light;

12 a linear polarizer located on the retardation film, for converting natural light into the

13 linearly polarized light;

14 a cholesteric liquid crystal color filter located on the second substrate for selectively

15 reflecting light having at least one color received from the liquid crystal layer; and

16 a black background located beneath the second substrate for absorbing light passing

17 through the cholesteric liquid crystal color filter.

1 8. The reflective liquid crystal display of claim 7, wherein the retardation film is a $\lambda/4$ plate.

1 9. The reflective liquid crystal display of claim 7, wherein the black background is made of a

2 polymeric material.

1 10. The reflective liquid crystal display of claim 7, wherein a bandwidth of the color filter can
2 be controlled by adjusting a pitch of the cholesteric liquid crystal color filter.

1 11. A reflective color liquid crystal display device, comprising:

2 first and second substrates spaced apart from and opposite to each other;

3 a liquid crystal layer interposed between the first and second substrates having liquid
4 crystal molecules;

5 a linear polarizer arranged over the first substrate, the polarizer converting natural
6 light into linearly polarized light;

7 a retardation film disposed under the linear polarizer, the retardation film converting
8 the linearly polarized light into circularly polarized light;

9 a negative uniaxial film arranged between the retardation film and the liquid crystal
10 layer, the uniaxial film compensating for a phase difference between a direction of an
11 incident light entering the liquid crystal layer and a direction of the liquid crystal molecules
12 adjacent to the first and second substrates of the liquid crystal layer;

13 a cholesteric liquid crystal color filter disposed under the liquid crystal layer, the
14 cholesteric liquid crystal color filter selectively reflecting light received from the liquid
15 crystal layer; and

16 a black background arranged under the color filter, the black background absorbing
17 light passing through the cholesteric liquid crystal color filter.

1 12. The reflective color liquid crystal display device of claim 11, wherein the liquid crystal
2 molecules have a homeotropic orientation when an electrical field is not applied thereto.

1 13. A reflective color liquid crystal display device, comprising:

2 a first substrate;
3 a second substrate spaced apart from and opposite to the first substrate, the second
4 substrate having arranged thereon a plurality of pixel electrodes and corresponding common
5 electrodes being spaced apart from each other;
6 a linear polarizer changing natural light into linearly polarized light and being
7 positioned at an outer surface of the first substrate;
8 a liquid crystal layer interposed between the first and second substrates and having
9 liquid crystal molecules being oriented by a parallel electric field between each pixel
10 electrode and corresponding common electrode;
11 a cholesteric liquid crystal color filter disposed between the liquid crystal layer and
12 the second substrate, selectively reflecting light received from the liquid crystal layer; and
13 a black background absorbing light passing through the cholesteric liquid crystal
14 color filter.

1 14. The reflective color liquid crystal display device of claim 13, further comprising a
2 negative uniaxial film arranged on the liquid crystal layer.